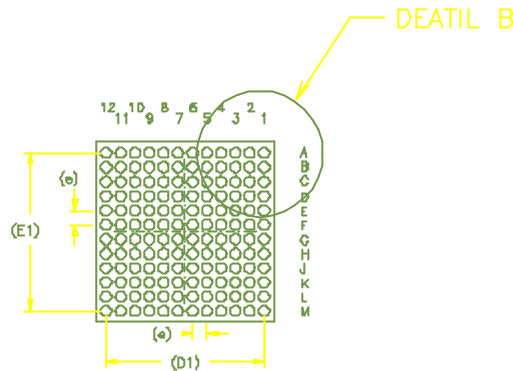
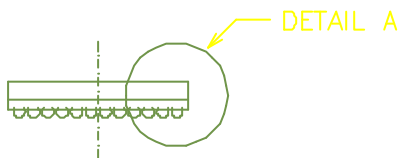


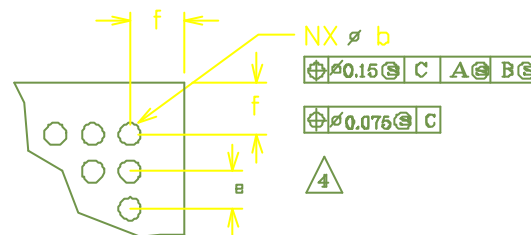
TOP VIEW



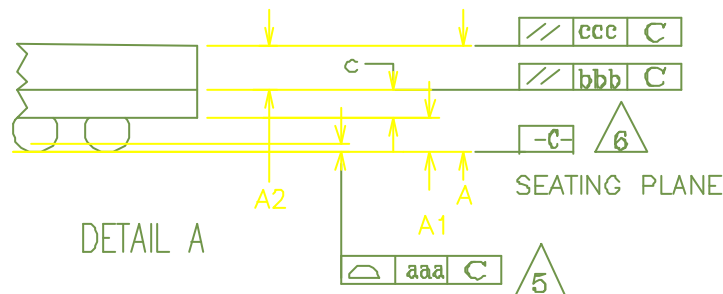
BOTTOM VIEW



SIDE VIEW



DETAIL B



DETAIL A

REVISIONS				
ECN	REV	DESCRIPTION	DATE	APPROVED
	A	Initial release	2/4/98	

DIMENSIONAL REFERENCES			
REF	MIN.	NOR.	MAX.
A	1.25	1.35	1.45
A1	0.25	0.30	0.35
A2	0.65	0.70	0.75
D	9.80	10.00	10.20
D1	8.80 BSC.		
D2	9.80	10.00	10.20
E	9.80	10.00	10.20
E1	8.80 BSC		
E2	9.80	10.00	10.20
b	0.35	0.40	0.45
c	0.35		
aaa			0.15
bbb			0.20
ccc			0.25
e	0.725	0.80	0.875
f	0.50	0.60	0.70
M	12		
N	144		

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETERS
- 'a' REPRESENTS THE BASIC SOLDER BALL GRID PITCH.
- 'N' REPRESENTS THE BASIC SOLDER BALL MATRIX SIZE AND SYMBOL 'N' IS THE MAXIMUM ALLOWABLE NUMBER OF BALLS AFTER DEPOPULATING
- 'b' IS MEASURABLE AT THE MAXIMUM SOLDER BALL DIAMETER PARALLEL TO PRIMARY DATUM  $\overline{C}$ .
- DIMENSION 'aaa' IS MEASURED PARALLEL TO PRIMARY DATUM  $\overline{C}$ .
- PRIMARY DATUM  $\overline{C}$  AND SEATING PLANE ARE DEFINED BY THE SPHERICAL CROWNS OF THE SOLDER BALLS.
- PACKAGE SURFACE SHALL BE MATTE FINISH CHARMILLES 24 TO 27.
- PACKAGE CENTERING TO SUBSTRATE SHALL BE 0.0760 MM MAXIMUM FOR BOTH X AND Y DIRECTION RESPECTIVELY.
- PACKAGE WARP SHALL BE 0.050MM MAXIMUM.
- SUBSTRATE MATERIAL BASE IS BT RESIN
- THE OVERALL PACKAGE THICKNESS "A" ALREADY CONSIDERS COLLAPSE BALLS



144 fpBGA (10 x 10 mm)  
MARKETING OUTLINE DRAWING

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DRAWN BY : ALLAN P. DATE : 12/11/97  
APPROVED BY : MACS D. DATE : 12/11/97  
DIMENSIONS IN MM PAGE 1 OF 1  
DO NOT SCALE DRAWING CODE : 10144\_FM1

DWG NO.: DGMA10144-FM1

REV. A